

## City of North Vancouver – Smart Cities Challenge 2018 Submission

### SECTION I: APPLICANT INFORMATION

#### Question 1:

Please provide the following information on your community.

- Name of community: **City of North Vancouver**
- Province/Territory: **British Columbia**
- Population: **52,898**

#### Question 2:

Please select a prize category.

- \$10 million (population under 500,000 residents) **Yes**

### SECTION II: PRELIMINARY PROPOSAL

#### Question 3:

**Great cities strive to improve community quality of life, enable good mobility decisions and ensure a smaller carbon footprint. We will use lighting and signal technologies to create information driven dynamic parking regulations, pedestrian scale lighting, EV charging and prioritization for rapid transit; to optimize our streets for all people.**

#### Question 4:

Please describe the outcome (or outcomes) your proposal seeks to achieve by elaborating on your Challenge Statement. (2,500 words max)

**Our response to this challenge addresses some key issues experienced in our community with meaningful infrastructure improvements that will create measurable results. These can be broken into key components that work together to provide an improved experience in the public realm and allow streets to function optimally and respond flexibly to all of the pressures placed on these critical spaces.**

Our project area is the lower Lonsdale neighbourhood which is comprised of approximately 25 blocks of medium to high density residential and commercial development with a waterfront based public space hub and transit node.

The components of the plan include:

1. Support the 2019 launch of a new east-west rapid bus route to improve transit travel times and increase ridership. This can be achieved through installation of modern traffic signal controllers to provide adaptable signal timing to reduce traffic delays on the transit corridors and to provide transit prioritization and queue jumping road geometrics. The City of North Vancouver has 64 traffic signal controlled intersections and all of the signals are currently connected via fibre optic cables and radio mesh network to a central traffic management system so the approach to create preferred adaptable routes is scalable to our whole city.

Measured outcomes: Increased ridership and reduced transit travel times can be measured in partnership with TransLink.

2. Install new LED pedestrian scale lighting within the study area at a spacing frequency that dramatically improves public realm light levels, provides for the means to introduce Electric Vehicle charging stations in public curbside locations and introduces electronic regulatory signage to provide for more dynamic street use and less labour intensive regulatory changes. Our current levels of street lighting in this medium density residential and commercial neighbourhood does not support walking in all conditions and is end of life infrastructure. We wish to improve the walking mode split of the community and enable the choice of walking for recreation and errands in all weather and in the darker hours of the winter.

This plan to introduce new street lights helps to achieve a number of objectives:

- 2.1 Replace end of life infrastructure to improve condition and reduce operating maintenance and energy usage costs.

Measured outcome is the reduced total cost of ownership of the street lighting infrastructure reducing cost burden on City of North Vancouver tax payers.

- 2.2 Improve light levels to create a more inviting pedestrian realm and increase the number of community members enjoying their public spaces.

Measured outcome is an increase in use of the public realm and walking mode which will be measured as part of our Walk CNV Plan which is slated to be completed and presented to Council later in 2018.

**2.3 Allow for public Electric Vehicle (EV) charging stations in street side parking areas.**

**Measured outcome is an increase in publicly available EV charging stations which will result in a reduced Green House Gas (GHG) output from our community.**

**2.4 Introduce new electronic regulatory signage to enable more dynamic curbside regulations and reduce the effort of swapping out fixed signs. This will allow easy adjustments to manage demand from the community and provide the optimized use of public space for the businesses and residents in this area and also allow short-term conversion of street space in response to public interest.**

**Measured outcomes are a reduction in costs associated with changing and repairing signage and an improvement in the use of curbside spaces to support residents and businesses in the area.**

- 3. Collect real time information on street usage and parking availability, both on street and within neighbourhood public parkades, to help our street space designers create appropriate and flexible curb space regulations. The next step would be to publish information on the active regulations and parking availability. This would help provide our community with better information to improve trip mode decisions to this neighbourhood, reduce travel time and minimize traffic created by vehicles circling or trolling the neighbourhood for parking spaces. This can be achieved through installing monitoring equipment on the new street lights to measure the use of the curb side space, install in and out counters on public parkades to assess the number of vacant stalls and to combine that information in a form that is easy to access remotely.**

**Measured outcomes are: firstly, a Council approved process and program for improved decision making and opportunity for public input around how we measure and address competing demands for curbside space; and secondly, a method to provide the public real time information on parking availability and current curbside regulations.**

- 4. Improve access to and success of community oriented events in the public realm including the waterfront and shipyards area by supplying real time information on mode options and parking availability. Because of the limited road space within the CNV it is imperative that we learn how to be more flexible with this inherently static asset. The public's desires for activation of the street can easily and more cost effectively be supported through dynamic curb side regulations. With the click of a button electronic regulatory signs can provide notice of protected spaces to facilitate any number of initiatives supported by the community. Also by publishing information on current parking regulations and availability of parking**

both on street and in private parkades the public can make informed decisions about how they want to travel to and within the neighbourhood.

Measured outcome is an increased flexibility of curbside space and the effect providing that information has on mode splits and general traffic counts in the neighbourhood both during event and non-event times.

5. Improve access to neighbourhood businesses by increased public realm lighting, improved transit times and adjusting curbside parking to create the right supply to support businesses.

Measured outcomes are an increase in active and transit transportation modes visiting the lower Lonsdale businesses as well as a measured correlation between parking regulations and increased visits to those businesses.

The data representing the current state will be used as a representative baseline for “before” conditions, while data sets collected after implementation will be used as “after” data. If the City of North Vancouver is shortlisted for further consideration to the Smart City Challenge, a detailed project plan will be developed in Q3 of 2018 and will be included in the next proposal document including the details and methodology of “before” and “after” data to measure above desired outcomes. For measuring progress towards outcome, data collection of identical data sets will be executed periodically, following a strategically created schedule. Proper analysis of the collected data will be completed, with the objective of identifying gaps that, if addressed on time, will result in an improved outcome.

Applying the Smart City approach is fully justified for the City of North Vancouver as the City is small geographically, densely populated and fully built out with very limited land rights of way. This poses a challenge when solving typical engineering problems such as traffic flow and energy efficiency improvements with solutions that might work in other locations. Unlike most North American municipalities, with its population of 52,898 and jurisdictional area of only 11.8 km<sup>2</sup>, the City of North Vancouver cannot consider increasing road, intersection, or parking lot capacity by widening roads and purchasing more land. However it does have the option to implement intelligent infrastructure that will maximize the effectiveness of its existing roads. As the City of North Vancouver serves as a downtown core to all three of Vancouver’s North Shore municipalities and is a main access point to North Shore visitors all year round, an improved and optimized public realm and transportation experience for both the local residents and the visitors is essential.

### **Question 5:**

Please describe how your community residents have shaped your Challenge Statement. Describe your plans for continuing to engage and involve them in your final proposal going forward. (1,500 words max)

The issues identified by this challenge application, and our approach to creating meaningful improvements, are in response to community input and feedback over multiple years. When our residents and business owners are asked their most pressing issues the top few are consistently: too much traffic, lack of affordable housing, lack of access to quality affordable childcare, limited parking and the lack of effective transit. Whereas the most consistently identified benefits of our city are: the vibrant community, established commercial centres, city programmes and services, access to nature in our parks and trails and the dynamic waterfront.

While the City has not undertaken a specific campaign to engage our community in the Smart Cities Challenge to date, in 2014 the City completed the latest refresh of our Official Community Plan which became the primary driver for this challenge proposal. Since then, residents and business owners have actively participate in numerous public engagement events from development to policy to service creation and in each of these engagements input on various topics is recorded and archived to help direct services and infrastructure improvements. Certainly the input and feedback from our community has shaped the proposal that makes up this challenge application.

Should the City of North Vancouver be shortlisted through the Smart Cities Challenge, an overt public engagement and consultation campaign will help flesh out the proposal and ensure details of the solutions are tailored to meet the needs and desires of our community. Continued collaboration with TransLink, the Lower Lonsdale Business Association and various advisory panels that provide guidance on a range of areas such as inclusion, accessibility and specific modalities will help provide clarity to targets and opportunities. We will solicit input into the detailed solutions through a range of outreach activities such as town hall/open house events and through specifically targeted workshops.

## **SUB-SECTION 2 – PRELIMINARY PROPOSAL DETAILS (TOTAL OF 45/100)**

### **Question 6:**

Please describe your preliminary proposal and its activities or projects. (2,000 words max)

In addition to the objective based actions listed in question four, we provide here a list of more specific technical details and an outline of our process to support our proposal to show how achievable this proposal is in our City.

Following a shortlist of our proposal our process would be to advertise, through our regular communication channels, a public open house for members of our community to learn more about our idea and to solicit input into refining the proposal. Separate meetings would be established with the residents and business owners in the lower Lonsdale neighbourhood to hear the local perspective. At this time we would generate the public input process for the remainder of the proposal refinement stage.

Technical improvements considered as part of the proposal at this time include:

- Implementing a coordinated adaptive traffic signals operation connecting 30 signalized intersections along main transit routes by utilizing smart traffic systems. The need for traffic operations improvement is imperative to support the first of two rapid bus transit services planned for our city in 2019 and 2023, both which cut through and intersect in our project area. The City already possesses advanced traffic signal controllers that support adaptive signals operations software, and the City has a composite network of fibre optic cables and radios necessary for communication between traffic signals. With further upgrades to the network the peer-to-peer communication between traffic signals can be improved. Ultimately, adaptive signals operation is envisioned citywide, including all 65 signalized intersections.
- Installation of smart lighting and detection technology and the addition of TSP (Tool Less Sensor Platform) technology to achieve maximum energy savings and asset management efficiency. To futureproof utilizing smart infrastructure, the City's lighting design criteria already requires all new streetlights to have 7-pin receptacles. Additional streetlights equipped with Smart City sensors and the upgrade of existing streetlights with smart controllers combined with TSP will result in multiple applications, including: dimming lighting as time-of-day function for energy savings in areas where lighting design criteria from medium to low pedestrian activity change overnight, lighting triggered through motion detection that automatically illuminate with human or vehicle presence at areas where warranted, utilizing street lighting sensors for identifying available parking spots, full remote street lighting management and automatic notifications for burnt out lights or malfunctioning sensors, etc.

- Collection of data relating to the use of public curb space to optimize the parking regulations for not only time of day and week but to create a more flexible and responsive supply for demand. Information regarding parking regulations would be displayed through small electronic versions of the current street signs and through a web based application for remote public viewing. Recognizing the importance of data security, consultants will be engaged to provide appropriate guidance in this regard.
- The City intends to increase access to publically available electric vehicle charging stations by marrying them with new pedestrian scale lamps poles.
- Finally, there is one opportunity not described in question four which is staff's desire to explore the opportunity for building a micro hydro facility to achieve net-positive energy performance associated with the new city infrastructure. Due to the topography and underground infrastructure we believe there may be an option to demonstrate energy generation an offset within this neighbourhood context.

**Question 7:**

Please describe the ways in which your preliminary proposal supports your community's medium and long-term goals, strategies, and plans. (500 words max)

The City of North Vancouver's Smart Cities Challenge preliminary proposal closely aligns with goals outlined in three key Council approved City policy and planning documents, those being: the Official Community Plan (updated in 2014), the Long Term Transportation Plan and the 100 Year Sustainability Vision.

The City's Official Community Plan (OCP) is our community's statement of its long term vision and provides regulatory guidance for the paths to the future. An integrated approach to building capacity is integral to the City becoming both more sustainable and resilient to changing conditions over time. The Sustainable City Framework has been developed in response to this need. Evolving out of previous concepts of sustainability, the framework fosters a more integrated approach to achieving the City's short- and long-term goals. It exists as an interlinked set of community values centred on a vision of the City, in 2031, as a vibrant, diverse and highly livable community. The City sees the Smart Cities Challenge as an opportunity to support the community vision of effectively delivering improvements of City's physical structures and infrastructure by implementing the latest technology, and meeting and exceeding targets related to transportation mobility, access and environment as outlined in the City's OCP Targets, Improvements and Monitoring Strategy document. For more information about the City's OCP is available here: <http://www.cnv.org/Your-Government/Official-Community-Plan>

Some of the goals included in the City's Long Term Transportation Plan are: reduced local greenhouse gas emissions, a healthy local economy supported by efficient movement of goods and services, a more efficient road network that safely and effectively accommodates all modes, and collaboration with our neighboring municipalities and other agencies.

The City and the University of British Columbia Design Centre for Sustainability (UBC-DCS) have prepared and published an innovative 100 Year Sustainability Vision for the City. Operating under the themes of liveability, sustainability and resilience. This 100-year plan looks at likely scenarios, challenges and opportunities in the coming decades, allowing the City to develop more forward thinking policy planning and to be a better, stronger advocate for regional, provincial and federal sustainability legislation. This long-range vision aims to guide the City toward carbon-neutral status by 2107, the City's 200th anniversary. More information about our 100 Year Sustainability Vision can be accessed from our website: <http://www.cnv.org/your-government/sustainability-in-the-city/city-initiatives/100-year-sustainability-vision>

As the City's preliminary proposal targets transportation improvements and energy efficiencies achieved through use of smart infrastructure and ideally utilizing an in-house micro hydro system for net-positive energy performance, the goals outlined in above mentioned plans align with the goals of the City's Smart Cities challenge proposal.

### **Question 8:**

Please describe your community's readiness and ability to successfully implement your proposal. (1,000 words max)

The City has successfully delivered numerous multi-stakeholder complex projects with ambitious deadlines.

One of the many successfully completed projects is the Low Level Road Project. The project was designed to enhance rail and port operations as international trade continues to grow, and to address long-standing community safety and traffic congestion challenges in the area. The Low Level Road Project involved the realignment and elevation of approximately 2.6 kilometres of the Low Level Road, between St. Georges Avenue and 3rd Street East, providing space for two new rail tracks to improve rail switching efficiency and capacity. The project also eliminated three existing at-grade rail crossings and provided grade separated access to the Neptune and Cargill terminals on Port Metro Vancouver land. Works addressed safety, recreation and noise challenges associated with port operations along the Low Level Road, including the reconfiguration of three intersections and improved lanes for cyclists. In addition, the project involved the completion of the Spirit Trail multiuse pathway from St. Georges Avenue to Kennard Avenue, including structures over two

creeks in Moodyville Park and an overpass at 3rd Street East near Heywood Street. The Spirit Trail multiuse pathway accelerates the City of North Vancouver's vision for creating highly walkable and bikeable communities.

In April 2015, the Low Level Road Project received an Award of Merit in the Transportation and Bridges category at the 26th Annual Engineering Excellence Awards honouring innovation and technical excellence of the best engineering projects in BC.

Currently, the City is in the process of delivering a multi-million dollar pedestrian and cyclist tunnel to complete the Spirit Trail in collaboration with the Squamish Nation on their Mission Reserve.

More information about the Cities major past and ongoing projects can be accessed from following links:

<http://www.cnv.org/property-and-development/projects-and-developments/successes-and-achievements>

<http://www.cnv.org/Property-and-Development/Projects-and-Developments/Major-Studies-and-Projects/Low-Level-Road-Project>

<http://www.cnv.org/Parks-Recreation-and-Culture/Parks-and-Greenways/Greenways/North-Shore-Spirit-Trail>

<http://www.cnv.org/property-and-development/projects-and-developments/major-studies-and-projects>

### **Question 9:**

Describe your plan for using the \$250,000 grant, should you be selected as a finalist. Provide a high-level breakdown of spending categories and an accompanying rationale. (500 words max)

If selected as a finalist, the \$250,000 grant will be used to cover the following expenses:

- Internal staffing: \$50,000 will be used to fund a project manager position for developing the proposal – the position will be a secondment from existing staff and funds will be used to hire backfill to ensure critical work is not delayed.
- External consulting: \$170,000 for engaging professional consultants in the fields of street lighting, EV charging and data privacy.
- Public consultation: \$10,000 for development of material to support effective public involvement.
- Contingency reserve: \$20,000.

**Question 10:**

Describe the partners that are or will be involved in your proposal. Where partners are not yet determined, describe the process for selecting them. (500 words max)

The City of North Vancouver currently works closely with the North Vancouver Chamber of Commerce and the Lower Lonsdale Business Improvement Area (BIA) Society. The North Vancouver Chamber is a network of local businesses, professionals, and other community groups working towards furthering their collective interests within the community, while the Lower Lonsdale Business Improvement Area Society is a non-profit society of business and property owners that establishes its own priorities, programs and budgets with the objective of the general betterment of businesses in the BIA.

If the City of North Vancouver is among the shortlisted candidates for further proposal and consideration, the City will announce the news to these two associations, which will likely support further work on the Smart Cities Challenge. Additionally, because most local universities and colleges have one or more programs focused on developing smart city infrastructure, if shortlisted the City will also approach these such local post-secondary institutions regarding partnership in further developments related to the Smart Cities challenge. Lastly, if shortlisted, the City will also consider approaching the other North Shore municipalities – the District of North Vancouver and the District of West Vancouver to explore potential collaborative opportunities.

**Question 11 (confidential annex):**

Please provide, if and only if required, confidential third party information. Information provided in this section will be exempt from the requirement to be posted online. (500 words max)

Third party information in this section should be supplemental to the information provided elsewhere in the application and be limited to those details that are deemed confidential. Please clearly indicate which question(s) the information provided in this section relates to.

**SECTION III: OTHER REQUIREMENTS**

This section has no bearing on the evaluation, but is required to complete the application. This section is not required to be posted online with the exception of questions 12 and 13.

**Question 12:**

Provide a 200-word summary of your preliminary proposal. You may also provide an image that represents your preliminary proposal.

The City of North Vancouver sees the Smart Cities Challenge as an opportunity to advance our intentions to optimize public spaces for the public. By futureproofing our signals and streetlights for the next generation smart infrastructure and by establishing systems to collect, collate and share information on how our streets are being utilized we can create an optimized public space with adaptable curb side regulations. This has numerous positive outcomes such as improving transit travel time along main corridors, reduced delays when looking for available parking spots, extending the City’s infrastructure service life, providing an improved public realm and improving walking conditions within the neighbourhood, providing additional charging for electric vehicles and increasing access to local businesses and public events in the neighbourhood and the dynamic waterfront area. This initiative is very scalable across our city and to other dense municipalities across Canada and would well position ourselves toward meeting the goals and objectives defined in both our Official Community Plan and the 100 Year Sustainability Plan.

**Question 13:**

Provide a link to the online location where you will post the full version of your application.

<http://www.cnv.org/your-government/living-city/smart-cities-challenge>

**Question 14:**

In accordance with your governance structure, provide evidence of the commitment to your preliminary proposal from your community’s leadership. This can be a letter of support with signatures from your mayor(s), chief(s), or equivalent or a council resolution, a band council resolution, etc.

**Letter of Endorsement from the Mayor’s Office - <http://www.cnv.org/your-government/living-city/smart-cities-challenge>**

**Question 15:**

Please identify the point of contact for the application.

- Name: **Karyn Magnusson**
- Title and affiliation: **Deputy City Engineer**
- Phone number: **604 983 7338**
- Email address: **[kmagnusson@cnv.org](mailto:kmagnusson@cnv.org)**

**Question 16:**

Read the Privacy Notification, Consent and Release form, and Communications Protocol and indicate your agreement.

**SECTION IV: SURVEY QUESTIONS**

This section has no bearing on the evaluation, but is required to complete the application. This section is not required to be posted online.